Journal of Psycholinguistic Research (2019) 48:699–712
https://doi.org/10.1007/s10936-018-09626-7

# The Role of Short Vowels in Arabic Listening Comprehension

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Published online: 14 January 2019


**Abstract**
The goal of the present study was to investigate the effect of short Arabic vowels on listening comprehension. It is well documented that short vowels affect reading and reading comprehension in Arabic literacy. Since reading comprehension and listening comprehension share many commonalities, it is assumed that short vowels will positively affect listening comprehension too. Two listening conditions were presented to students in three grade levels, 7th, 10th and 12th grades: a fully vowelized text and the second without short vowels (on ends of words). Students had to listen and answer multiple choice comprehension questions about the read aloud texts. Further, interviews were conducted with 10 volunteered students from each grade level to get their feedback about their experience. The results indicated significant differences between the two listening conditions in favor of the fully vowelized condition. The results are discussed in relation to different orthographies, reading comprehension, phonology, working memory and comprehension.

**Keywords** Listening comprehension · Short vowels · Arabic orthography · Different orthographies

## Introduction

The role of short vowels in reading was studied in Arabic (Abu-Rabia 1998a, b) and in Hebrew (Shimron and Sivan 1994), a Semitic language like Arabic. In the Arabic orthography, the role of short vowels attracted the attention of scholars (Abu-Rabia 1995, 1996, 1997a, b, 1998a, b, 1999; Abu-Hamour et al. 2013; Abu-Rabia and Taha 2016). Such studies indicated the positive contribution of short vowels to reading in the Arabic orthography. However, some other studies indicated a different pattern of results, that short vowels hinder the fluency of reading (Taha 2016; Ibrahim 2013) and do not contribute to the quality of reading.

Somehow, the role of short vowels in listening comprehension was never investigated. Such a skill is usually considered an important skill in language acquisition (Bingol et al. 2014). Listening comprehension includes testing essential factors such as relationships between concepts, ideas, reasons and results that are read aloud to the listener.

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Furthermore, it includes the ability to understand implicit and explicit information from a text read to the listener.

Listening comprehension constitutes 40–50% of the international communication (Mendelssohn 1994). It is an active process of deciphering and constructing meaning from verbal and non-verbal messages (Nunan 1998).

Scholars have pointed to some of the obstacles that reduce the quality of listening comprehension: poor vocabulary, prior knowledge about the topic, listening strategies and anxiety (Bingol et al. 2014).

With the uniqueness of short vowels in the Arabic orthography and the importance of short vowels in reading, it is interesting to test the role of short vowels in listening comprehension, especially since listening comprehension is considered a very important skill in language acquisition (Mendelssohn 1994; Nunan 1998; Bingol et al. 2014).

The role of short vowels in listening comprehension of a read aloud text had not been investigated before. This study will contribute to the literature of language acquisition and Arabic orthography.

## Arabic Orthography

Arabic is a language written in an alphabetic system of 28 letters, all consonants except three, the long vowels. Most Arabic letters have more than one written form, depending on the letter's place in a word: beginning, middle, or end. For example, the letter خ-/χ/- (this is the separated mode of the letter) is written at the beginning of the word (خـ), in the middle of the word (ـخـ) and at the end of the word (ـخ). The essential shape of the letter, however, is maintained in all cases (Abd El-Minem 1987). In addition, the letters are divided into categories according to basic letter shapes, and the difference between them is the number of dots on, in or under the letter (for example, the letters ب/b/, ت/t/, ث/th/, ن/n/are from the same category). Dots appear within 15 letters, 10 of which have one dot, three have two dots, and two have three dots. These dots are part of the consonant letters. In addition to the dots, there are diacritical marks that contribute phonology to the Arabic alphabet (short vowels, ـَ/a/, ـُ/u/, ـِ/e/, ـْ/sukoon/to indicate silent sounds, ـّ/shadda/- to indicate stressed syllables) (Abu-Rabia 2001a, b, 2007). Arabic words are a combination of consonants and vowels. Skilled and adult readers are expected to read texts without short vowels, but this demands heavy reliance on context and other resources. Beginners and poor readers read texts with short vowels. Vowelized Arabic is considered to be shallow orthography, and unvowelized Arabic is considered to be deep orthography. Reading accuracy in Arabic requires vowelizing word endings according to their grammatical function in the sentence, which is an advanced linguistic ability (phonological and syntactical abilities) (Abu-Rabia 2001a, b, 2007). On the other hand, silent reading comprehension is less strict, because the reader can rely on orthography, morphology, and other resources (Abu-Rabia 2001a, b, 2007).

*Arabic morphology* Arabic morphology is built of two types of structures: derivational and inflectional.

*Derivational morphology* All words in Arabic are based on phonological patterns built on roots that are consonantal patterns. For example, the word/كاتب/kateb/writer/is constructed from the root/k-t-b/which semantically, has to do with writing and the pattern (-a-e-) that indicates the person who is performing the action. Roots are triliteral (like k-t-b) or quadrilateral (/d-h-r-j/to roll/), that is, with three or four consonants. The phonological pattern is constructed

of: (a) short vowels built onto roots; (b) patterns that include vowel letters, which are inserted between the root consonants; (c) the phonological process does not break the orthographic order of the consonantal root (example, the verb اِنْكَتَبَ/inkataba/has been written—the passive form of كَتَبَ/kataba/wrote/). With inserted vowels the phonological pattern of the infixes breaks the orthographic order of the consonantal root (example, the noun كَاتِب/kateb/writer/). Further, additional patterns with vowel letters that may added as prefixes or suffixes—in this case (example, the noun مَكْتُوب/maktoub/written-letter). The root conveys the initial lexical access and the combination of roots and phonological patterns conveys specific semantics (Abu-Rabia and Saliba 2008; Abu-Rabia and Awwad 2004).

The derivational morphology has two types of word patterns: verbal word patterns and nominal word patterns. There are 15 frequent verbal word patterns in Arabic. Each verbal word pattern determines the inflectional pattern of the word (Abd El-Minem 1987). The verb pattern conveys basic semantics via verb roots, and it can change the meaning of a new word based on that root; different verb patterns built on the same root may convey different semantics (Abd El-Minem 1987). There are nine nominal word patterns. There is semantic consistency in all these different nominal word patterns (Bentin and Frost 1987), some of which are more common than others. The derivations of nouns are constructed in two ways, one by addition of nominal patterns to the base roots and one by changing the past tense to the present tense by applying a phonological pattern to the latter (Abd El-Minem 1987).

*Inflectional morphology* In contrast to the derivational process, in which the basic constituents are roots and word patterns, the inflectional morphological system in Arabic is constructed by attaching prefixes and suffixes to real words. The system of inflectional morphology of verbs is systematic and considers person, number, gender and time. In the past tense, inflectional morphology shows person, number, and gender through the addition of suffixes to the basic verb pattern (third person masculine singular. Example: the word كَتَبَ/kataba/he wrote changes to كَتَبَت/katabat/she wrote). In future and present tenses of verbs, the inflectional morphology is also according to person, number, and gender, indicated by prefixes and sometimes suffixes (for example: يَكْتُبُ/yaktobo/he writes/changes into تَكْتُبُ/taktobo/she writes/). The imperative mood is formed for person, number, and gender by the addition of prefixes and suffixes (for example: أُكْتُبْ/oktob/write (masculine) change into أُكْتُبِي/oktobey/write (feminine ending) (Abd El-Minem 1987). The inflectional morphological system of nouns considers gender (masculine/feminine), number (singular/plural), masculine and feminine and pairs masculine/feminine.

This table shows how the root/k-t-b/changes using the noun pattern "writer" for gender and number (Table 1).

Most verbs and the majority of nouns are constructed out of three consonant roots, occasionally two or four. Roots are built in phonological patterns to create specific words. These patterns may be a series of consonants or a series of vowels and consonants. As for roots and morphemic word patterns, most words in Arabic are constructed of two morphemes: the combination of a root and a word pattern creates a certain word. Different morphemes convey different types of information: the root conveys semantic information then the phonological

**Table 1** Root/k-t-b/changes, gender, and number

| Gender/number | Singular | Pairs | Plural |
|---|---|---|---|
| Masculine | /kateb/ | /kateban/ | /katebon/ |
| Feminine | /kateba/ | /katebatan/ | /Katebat/ |

pattern which determines the core meaning of the word (Abu-Rabia 2001a, b), whereas the word patterns usually convey information on word class.

In sum, the combination of morphological units in Arabic is not linear. It relies on intertwining between two independent morphemes (the root and the word pattern). The order of root letters is dependent upon the word pattern and its way of intertwining with the root. The word pattern can be built of prefixes, suffixes and infixes whose intertwining with the root can break the order of the root letters (Abu-Rabia and Awwad 2004; Bentin and Frost 1987).

## Listening Comprehension

Listening comprehension is an important skill in language acquisition in daily communication and in the learning process (Gilikjani and Ahmadi 2011). According to Swanson (1996), listening comprehension is even more important than reading, writing and speaking because without it learning becomes random. Purdy (1997) argues that listening is a dynamic active learning process that involves participation, perception, interpreting, remembering and reactions to verbal and non-verbal needs, ideas and human knowledge (O'Malley and Chamot 1989). Further, Call (1985) defines listening comprehension as a problem solving process where the listener scans the listening input to find clues that may help to rebuild his/her knowledge. A few elements are involved in this process: word recognition, extracting the exact relationships between words, and sentence syntax and meaning (Cutler et al. 1997).

Scholars argue that some elements may hinder the process of listening comprehension: vocabulary, speed of talk, and prior knowledge (Chiang and Dunkel 1992; Goh 2000). Hamouda (2013) argues that the most important variable affecting listening comprehension is vocabulary. A rich vocabulary may ease listening comprehension. This was the most popular answer of 60 Chinese students. However, their teachers claimed that the complex syntactic sentences, pressure and intonation are the most important variables affecting listening comprehension (Boyle 1984).

There are some additional factors that affect listening comprehension: the quality of the technological media that teachers use in class (computers, loudspeakers and multimedia systems) (Bingol et al. 2014); the speaker's accent (Munro and Derwing 1999); length and frequency of listening (Carroll 1977; Underwood 1989); and environmental conditions (Bingol et al. 2014).

In addition, Rubin (1994) argues that lack of cognitive and metacognitive reading strategies hinder reading comprehension and listening comprehension as well. Furthermore, Goh (2000) reported that working memory, perception, attention and emotional factors (anxiety, tension and anger) also hinder listening comprehension (Elkhafaifi 2005).

In sum, prior knowledge, vocabulary, speaker's speed (fluency), intonation, tension, anxiety, quality of the technological listening condition, environmental conditions, language and culture of the listening material, accent, and length of listening, cognitive and metacognitive listening (reading) strategies are major factors that affect listening comprehension.

Since the Arabic orthography is unique using short vowelization in literary Arabic, it is interesting to investigate whether fully vowelized Arabic affects or does not affect listening comprehension. Such an issue has not yet been studied.

## Reading Comprehension and Listening Comprehension

According to the simple view of reading, there are two major skills involved: listening comprehension and word decoding. Gough et al. argue that part of the reading processes are also processes that listeners experience while listening to oral verbal messages. There is a positive significant correlation between reading comprehension and listening comprehension (Cain and Oakhill 2007; Roch and Levorato 2009). Further, some studies have indicated that listening comprehension predicts reading comprehension (Roch and Levorato 2009). Listening comprehension relies on auditory symbols, while reading relies on visual symbols. Reading comprehension texts are usually still available to the readers while answering questions about the text whereas listening comprehension relies on auditory texts and listeners do not enjoy listening or reading the auditory text again (Buck 2001; Flowerdew 1994).

## Short Vowels and Arabic Reading and Comprehension

Abu-Rabia (1995, 1996, 1997a, 1999) has tested the effect of short vowels reading and reading comprehension. In eight successive studies he investigated how short vowelization affect reading accuracy and reading comprehension combined with additional factors like sentence context, type of readers, poor, skilled children in their early reading stages, text type (informative, poetic and Koranic) and reading condition: word identification and reading comprehension (Abu-Rabia 2001a, b).

The studies' of Abu-Rabia (1995, 1996, 1997a, 1999) tested the effect of short vowels on the reading accuracy of highly skilled Arabic readers. These studies intended to test the effect of short vowels and sentence context on reading accuracy among skilled Arabic readers, ages 17-18 years old. Furthermore, Stanovich (1980) Interactive Compensatory theory was tested here for its relevancy to the Arabic orthography when highly skilled readers read words and sentences with and without short vowelization. The results indicated that short vowels and sentence context contributed separately to reduce students reading errors. Further, sentence context and short vowelization reading condition, this combination of both variables in one reading condition reduced even more reading errors. The worst reading condition was when students read words without short vowels.

In an attempt to support his hypothesis from the previous study (Abu-Rabia 1996) to say that "reading in Arabic orthography of highly skilled readers does not fit any of the reading models derived for Latin orthography, this since none of the existing models considered short vowels or/and sentence context in the Arabic orthography" (Abu-Rabia 1997a, b: p. 639).

Furthermore, Author tested if the above-mentioned results are relevant to poor Arabic readers. His results indicated that short vowels and sentence context do help both population, poor as well as skilled readers (Abu-Rabia 1995, 1996, 1997a, b, 1998a, b, 1999).

In addition, Abu-Rabia (1997a, b) found that short vowels helped skilled readers significantly more that poor readers. Such results were replicated by Abu-Hamour et al. (2013) that short vowels improved poor as well as skilled reader in grade 5.

The results of Abu-Rabia (1997a, b) and Abu-Hamour et al. (2013) regarding the benefit from vowelized words and texts is ascribed to the uniqueness of the Arabic orthography and its rich and complex morpho-phonemic units; namely phonological patterns and

condensed morphological units, all demand highly visual-morphophonemic processing. The skilled readers obviously build up their morpho-phonemic lexicon much faster than the poor readers, which enables them to use this lexical knowledge in reading. Such lexical knowledge, poor readers are not equipped with (Abu-Rabia 1997a, b; Ibrahim 2013).

The conclusion of Abu Rabia studies (1997a, b), "There is a serious need to understand the reading process of the Arabic orthography as a function of a parallel-interactive-dynamic (PID) process of word identification and sentence context, with special focus on the sentence context as a key to initial lexical access among skilled and poor readers" (Abu-Rabia 1997a). Consistently, Abu-Rabia (1998a, b) tested the role of short vowelization and sentence context among 11th grade native Arabic poor and skilled readers. Students were asked to read texts in different writing styles; poetry, narrative, newspaper articles, and Koranic verses. In this study a new reading condition was added; false shot vowelization condition. The results indicated that false short vowelization hindered reading accuracy of the participants in the false vowelization condition; namely the participants could not recognize or/and ignore the false short vowelization of words and sentences (Abu-Rabia 1998a, b).

Furthermore, Abu-Rabia (1999) added a new variable to his short vowelization studies, reading comprehension among 2nd grade and 6th grade native Arabic students. The results indicated that both groups benefitted significantly more when texts were short vowelized. Abu-Rabia (1999) explained that words with short vowelization, namely with phonology adds more information to the coding saving process in working memory while reading and processing texts for reading comprehension purposes. This phonological addition enhances the working memory of readers and alternatively their understanding of texts becomes significantly higher (Abu-Rabia 1999: p. 100).

In order to generalize the results of short vowelization in reading comprehension, on all ages, Abu-Rabia (1995, 1996, 1997a, b, 1998a, b, 1999) tested reading accuracy and comprehension in Arabic and Hebrew as a second language of university Arab students. Students had to read fully vowelized Arabic texts and others without short vowels. The same reading conditions were presented to them in Hebrew as a second language.

The results indicated that short vowels contributed significantly to accuracy and understanding in all reading conditions in Arabic and Hebrew.

Consistently, Abu-Rabia (2001a, b) tested Arabic adult readers (ages 22–30) in Arabic and Hebrew as a second language. The most important results in both languages were; short vowels raised the level of reading accuracy in isolated words and in reading aloud short stories; short vowels raised the level of reading comprehension of stories in Arabic and Hebrew.

In addition, Abu-Rabia and Taha (2006) tested the spelling development of native Arab speakers, from 1st grade to 9th grade. They found that the phonological errors were the most common type of error through all grades. Namely, the phonological period in the development of Arabic spelling is a continuous stage that accompanies spellers at least until 9th grade in this particular study. This result supports the short vowels role in reading since these short vowels contribute phonology to the Arabic orthographic units (Abu-Rabia and Taha 2006).

Furthermore, Abu Rabia (2007) in a developmental study investigated the effect of phonological and morphological factors on the reading of 3rd grade to 12th grade Arabic phonology including mastering short vowelization and morphological knowledge and the way these factors predict reading through all grades. The results indicated the important role of both variables cross all ages (Abu-Hamour et al. 2013). The importance of the morphological factors are ascribed to the absence of short vowelization reading condition; readers must rely on visual orthographic characteristics of the Arabic

morphology in order to decode words. Usually Arabic readers have to cope with texts without short vowels almost when they read 5th grade.

Likewise, Abu-Rabia and Saliba (2008) have investigated the effect of phonological patterns and morphological verb roots on reading among regular and dyslexic readers. The results indicated that there is a lexicon development of verb roots through the years among the regular Arabic readers. Roots and phonological patterns did not help dyslexic Arabic readers to improve their reading skills. This is to say that the lexical dual model is relevant in this case to explain the results; dyslexic, poor and beginning readers rely on whole word recognition and regular readers use sub-lexical entries to read words.

In conclusion, the above-mentioned studies indicate the importance of short vowels in Arabic reading and reading comprehension among all type of readers.

Although there is ample evidence indicating the positive contribution of short vowels to reading Arabic, there is other data showing that short vowels do not contribute to reading in Arabic orthography (Seraye 2004; Khatib-Abu Leil 2011).

Seraye (2004) tested the influence of short vowels on the reading of adult native readers of Arabic. The reason for such results, in his opinion, is that adult Arabic readers have been exposed to texts and their orthographic lexicon is already well built, which enables them to use whole language approach in reading.

Likewise, Seraye tested the effect of vowels reading among 4th grade3 Arabic readers. He conducted four reading conditions: (a) reading sentences with *Shadda*: it marks a doubling of the letter when the letter is geminated and occurs within syllable boundaries as a consonant sequence (Dyson and Amayreh 2000); (b) reading sentences with short vowels and *Shadda*, (c) reading sentences with short vowels without *Shadda*; (d) and reading short vowels did not affect the reading, reading comprehension and the fluency of these 4th grade native Arabic readers. According to Seraye, the most influential variable on the quality of reading is the frequency of words. He argues that only frequency of words accelerates reading quality in Arabic orthography.

Consistent with the above results, Ibrahim (2013) tested the effect of short vowels on the reading of 8th grade native Arabic speaker. The participants had to read isolated words and pseudowords with and without short vowels. The results indicated that short vowels hindered the quality of reading: students read accurately and fluently words without short vowels compared to the short vowelized reading condition (Abdelhadi, Ibrahim and Eviatar 2011).

Likewise, Almadi (2007) tested the effect of short vowels among three groups: Dyslexic, chronological age-matched, and reading age-matched groups, in reading aloud and silent comprehension of texts. The results indicated that that short vowelized texts did not contribute to the participants' reading comprehension in any of the reading conditions; short vowelized vs. non-short vowelized, and reading aloud and/or silent reading among the three different groups.

Similarly, Hermrns et al. tested the effect of short vowels on homographic words in sentences. Their results indicated that fully and short vowelized words were not a better reading condition. The better reading condition was, when short vowels were partially added to homographic words. This is to say that visually over loaded reading conditions hinder the reading quality of readers in the Arabic orthography (Ibrahim 2013; Ibrahim et al. 2002; and Avin 1995).

Furthermore, in a recent study by Taha (2016), he tested the effect of short vowelization on reading fluency and accuracy of 146 2nd and 4th grade poor Arabic readers. The results indicated that these poor readers read fluently and accurately the non-short

vowelized reading conditions. Taha interpreted his results to say that over loaded visual reading condition hinders even the reading quality of poor readers.

## The Present Study

As mentioned in the above literature, reading comprehension and listening comprehension share many commonalities, since the Arabic orthography is unique using short vowelization in literary Arabic, and there is ample evidence that short vowelization affects positively reading and reading comprehension, it is interesting to investigate whether vowelized Arabic (vowelization of words' ends) affects listening comprehension. Such an issue has not yet been studied.

*Research questions* What is the role of short vowels in listening comprehension?

*Hypothesis* Short vowels will positively contribute to listening comprehension.

## Method

### Participants

Thirty students were randomly sampled from each grade of 7th, 10th, and 12th. There were 15 males and 15 females. Another 30 students were randomly sampled from 10th grade. There were 17 males and 13 females. In addition, 30 students were sampled from 12th grade, 15 males and 15 females. All the participants were from villages in Northern Israel.

### Materials

*Narrative texts* For each grade level, 7th, 10th and 12th grade, two different narrative texts were chosen from the Israeli curricula of the Ministry of Education. The participants did not study these texts and they were not familiar with them. All the texts for each grade level were equal in length (almost one page) and similar in literary Arabic difficulty. The texts were prepared in two listening comprehension conditions for each grade level: one was fully vowelized and the second was without short vowels on ends of words.

*Ten multiple choice questions* were asked about each text. Participants listened to the text read to them and then had to answer the 10 multiple choice comprehension questions. The texts and questions were judged by a team of seven Arabic teachers for clarity, linguistic level and difficulty. When texts were read to the participants they did not see the texts while listening to them and also not after listening while answering the multiple choice questions.

*Semi-structured interviews* Semi-structured interviews were conducted with 10 students from each grade level to get their feedback and comments about the two listening comprehension conditions.

### Procedure

The testing took three successive days. Each grade level was tested on each day. Participants were tested during the morning classes and each listening comprehension condition,

**Table 2** Means and standard deviations of listening comprehension condition without short vowels

| Grade | N | M | SD | F |
|---|---|---|---|---|
| 7 | 30 | 66.33 | 21.41 | 12.50* |
| 10 | 30 | 85.12 | 9.70 | 12.50* |
| 12 | 30 | 79.30 | 10.70 | 12.50* |

*$P < 0.001$

**Table 3** Means and standard deviations of listening comprehension with vowels

| Grade | N | M | SD | F |
|---|---|---|---|---|
| 7 | 30 | 98.66 | 3.45 | 39.04* |
| 10 | 30 | 83.30 | 11.17 | 39.04* |
| 12 | 30 | 95.76 | 4.12 | 39.04* |

*$P < 0.001$

the vowelized text and the unvowelized end of words in the second condition, was tested. Each was read aloud and students had to answer the multiple comprehension questions about the text. Each listening comprehension condition was tested in class and students were given 30 min to answer the questions about the text. A break of 30 min was given to the students between the two listening conditions. On the second day, the same procedure was repeated for the second level grade and on the third day the procedure was repeated for the third grade level, 12th grade. In addition, a day after the testing, semi-structural interviews were conducted. One on one interviews were conducted and they took ten successive days. They were conducted inside the schools in quiet rooms.

## Results

The data was analyzed via one-way ANOVA indicating the three grades' listening comprehension without short vowels on ends of words, and followed by the three grades' listening comprehension results with short vowels. Finally, t-tests analysis between the two listening comprehension results was calculated.

### Listening Comprehension Without Short Vowels (On Ends of Words)

There were significant differences between the three grade levels: grades 7, 10 and 12, $F(2, 87) = 12.471$, $P < 0.001$. Grade 10 gained the scores followed by grade 12 and the lowest were students of grade 7 (see Table 2).

### Listening Comprehension with Fully Short Vowels

The one-way ANOVA indicated significant differences between the three grade levels: 7, 10 and 12, ($F(2, 87) = 39.04$, $P < 0.001$) (see Table 3).

### Comparisons Between the Two Listening Comprehension Conditions

There were significant differences between the two listening comprehension conditions among grade 7 ($t = -8.17$, $P < 0.001$). Grade 7 students gained significantly higher in the vowelized condition. Likewise, there were significant differences between the two listening comprehension conditions among grade 10 students ($t = -5.70$, $P < 0.001$). Further, there were significant differences between the two listening comprehensions conditions among grade 12 ($t = -7.87$, $P < 0.001$) (see Table 4).

In general, there were significant differences between the total scores of all the grades together in the two listening comprehension conditions ($t = -7.75$, $P < 0.001$). The mean score of the listening condition with vowels was ($M = 95.90$, $SD = 9.74$), and of the listening condition without vowels was ($M = 76.91$, $SD = 16.72$).

Overall, there were clear significant differences between the two listening conditions with the favorite being the vowelized listening condition across all three grade levels.

## Interview Results

The students were interviewed individually and were asked about the vowelized texts and the unvowelized texts:

- Which one did you understand the most?
- Which one did you enjoy listening to? Why?
- Which one do you prefer for the next time?

Since the answers of the students were repetitive and similar from all grade levels a summary of their answers is reported in this section.

All the students (10 from each grade level who participated in the interviews) expressed that they understood the vowelized text and liked it more. They felt that it was more attractive and easy to listen to: "The vowelization adds music to the texts which helped us to enjoy listening." "It is like a piece of music, while the unvoweled text was hard to listen to and hard to understand and to pay attention to." It sounds "locked…all the sentences seemed as though they were not connected." "The differences between both texts, vowelized and non-vowelized, were huge." "We really liked the vowelized one." "The unvowelized text sounds like the spoken language and does not attract us as listeners." "We don't

**Table 4** Comparison results of the two listening conditions among the 3 grade levels

| Grade | N | M1 | M2 | P |
|---|---|---|---|---|
| 7 | 30 | 66.33 (21.41) | 98.66 (3.46) | −8.16* |
| 10 | 30 | 85.11 (9.70) | 93.21 (13.45) | −5.43* |
| 12 | 30 | 79.29 (10.70) | 95.75 (4.15) | −7.86* |

M1 = without short vowels

M2 = with short vowels

SDs are in parentheses

*$P < 0.001$

know exactly, but there is a musical connection between the sentences and words something like that…."

The students preferred the vowelized texts across all grades. Their above answers were repetitive. This is in spite of the fact that for each grade level, both texts were almost equal in linguistic difficulty, length and textual content. All texts dealt with social issues of the Arab sector in Israel that are familiar to the students from the Israeli daily newspapers and the Israeli media. All texts were judged by a team of Arabic teachers and the teachers of the specific grade levels.

As seen in the statistical section, the students achieved significantly higher in the listening comprehensions when the texts were fully vowelized as compared to the other listening comprehension condition when texts were without short vowels. This is to say that the participants of all the grade levels, as they expressed their opinion in the interviews, enjoyed and paid more attention, found it easier and achieved better results when they listened to the fully vowelized texts.

## Discussion

The results of the present study indicate that short vowels contributed to the quality of listening comprehension across all grade levels. The results of the interviews confirmed the statistical results: students at all levels reported that fully vowelized auditory texts attracted their attention and were easy to listen to. They were easy to understand and the students enjoyed listening to them. They explained that such texts were kind of musical and they could feel the music between the lines. The unvowelized auditory texts were difficult to listen to and they were difficult to understand.

The statistical results as well as the interview results are interesting and require explanations. Since reading comprehension and listening comprehension are related, it is logical that whatever affects reading comprehension may also affect listening comprehension (Cain and Oakhill 2007; Roch and Levorato 2009). Roch and Levorato (2009) argued that listening comprehension predicts reading comprehension.

It is worth noting that in the listening comprehension conditions, listeners do not see the text while answering the multiple choice comprehension questions. They have to remember the ideas and the sub-ideas of the text. This while in the reading comprehension conditions, readers have the advantage of looking at the text and checking their understanding of ideas in order to answer the multiple choice comprehension questions. Thus, the listening comprehension condition is much more difficult compared to reading comprehension.

Still, how do short vowels contribute to listening comprehension? To answer this question it is important to think of the contribution of phonology (short vowels) to understanding (decoding) words and texts.

There is ample evidence that short vowels contribute to the quality of reading and reading comprehension (Abu-Rabia 1995, 1996, 1997a, b, 1998a, b; Abu-Hamour et al. 2013; Shimron and Sivan 1994). Thus, it is logical that short vowels positively affect listening comprehension, because they positively affect reading comprehension and both conditions share almost the same skills (Swanson 1996; Purdy 1997; O'Malley and Chamot 1989).

Shimron and Sivan (1994) argue that their adult participants achieved significantly more in the fully vowelized Hebrew script (a Semitic orthography like Arabic) compared to the unvowelized script. They explained their results to say that short vowels contribute phonology to words, and phonology helps to reinforce saved materials in working memory;

words are saved in working memory in several ways—visual-orthographic, semantic and with phonological representation of words. Thus, phonology is one additional way to save information in working memory and ultimately to be used in understanding the auditory listening comprehension text (Shimron and Sivan 1994).

This argument raises the issue of the relation between working memory, phonology and comprehension (Hirshorn et al. 2015). There is a large body of research indicating that decoding and listening comprehension are correlated but separate skills and that the two elements of the simple view of reading explain the individual differences observed in reading comprehension across the developmental span, from beginning readers through adult readers (Hirshorn et al. 2015; Hoover and Gough 1990).

Listening comprehension involved the same language processes used to comprehend textual language, but it is free from the cognitive demands of having to decode text. In this way, listening comprehension can be conceptualized more broadly as one's ability to understand what one hears, not only in reading comprehension, but also for other purposes such as understanding a story or lecture (Kendeou et al. 2005).

Thus listening skills involve similar skills that involve reading comprehension such as phonology, vocabulary, inferencing, background knowledge, working memory and attention (Daneman and Merikle 1996; Lorch et al. 2000; Hirshorn et al. 2015; Hogan et al. 2014).

In other words, short vowels add phonology to words; such phonology helps readers and listeners save verbal messages in working memory, either read messages or heard messages, while listening or reading. This additional way of momentary saving in working memory helps listeners remember the heard ideas and retrieve them while answering the multiple comprehension questions about the read aloud text.

It seems that using literary Arabic without short vowelization does not contribute to the learning in the listening comprehension condition as compared to the fully vowelized listening comprehension condition.

At the practical level, the results of the present study suggest that teachers of Arabic should teach Arabic using the fully vowelized literary Arabic. Arabic lecturers in universities and colleges should also use fully vowelized literary Arabic when teaching and lecturing.

## Compliance with Ethical Standards

**Conflict of interest** The author declares that there is no conflict of interest.

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